Please check the examination details below before entering your candidate information

| Candidate surname | Other names |
|---|---|
| | |

Centre Number | Candidate Number

# Pearson Edexcel Level 3 GCE

## Thursday 25 May 2023

Morning (Time: 1 hour 45 minutes plus 10 minutes setting up time)

**Paper reference** **8MT0/41**

# Music Technology

## Advanced Subsidiary

## COMPONENT 4: Producing and analysing

**You must have:**
Figure 1 for Question 6 (enclosed), 2023 Pearson audio/MIDI files, headphones or monitor speakers, digital audio workstation (DAW) and MIDI keyboard.

Total Marks

### Setting up time

- Open a new project in your DAW using 16 bit/44.1 kHz sample rate.
- Save the project as '**comp4_your candidate number**' (**e.g. comp4_1234**) in the folder designated by your centre.
- Set the metronome to **85 bpm**.
- Import 'drums.wav' to a new track in your DAW, aligned with the beginning of bar 1.
- Ensure that the drums are audible and begin at beat 1 of bar 2. Ensure the drums play in time with the metronome during the first 4 bars.
- You must not open the paper until instructed to do so by the invigilator.

### Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- Save your audio files for Questions 1, 3, 4 and 5 within the 1 hour 45 minutes examination time.
- You must ensure that the left and right earpieces of your headphones are worn correctly.
- Access to a calculator or calculator software is not permitted.
- Access to the internet or local network is not permitted.

### Information

- The total mark for this paper is 84.
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*

### Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

*Turn over* ▶

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## SECTION A

**Answer ALL questions. Write your answers in the spaces provided.**

**Some questions must be answered with a cross in a box ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.**

**Question 1 is about the drums.**

**1** (a) Complete the following sentence by selecting **two** of the terms in the box:

**(2)**

The kick drum sounds ..... in bars 2–5 because it has a

..... pass filter on it.

| | | |
|---|---|---|
| bright | distorted | dull |
| band | high | low |

(b) Use a suitable filter on the drums in bars 2–5 to remove the kick drum, leaving only the hi-hats and percussion.

**(3)**

(c) The crash cymbal in bar 9 has a phaser on it.

Add a phaser with the same settings to the cymbal in bar 17.

**(3)**

**Bounce/export the completed drum part as a single 16 bit/44.1kHz stereo .wav file to the designated folder on your computer.**

**Name it 'q1_your candidate number' (e.g. *q1_1234*).**

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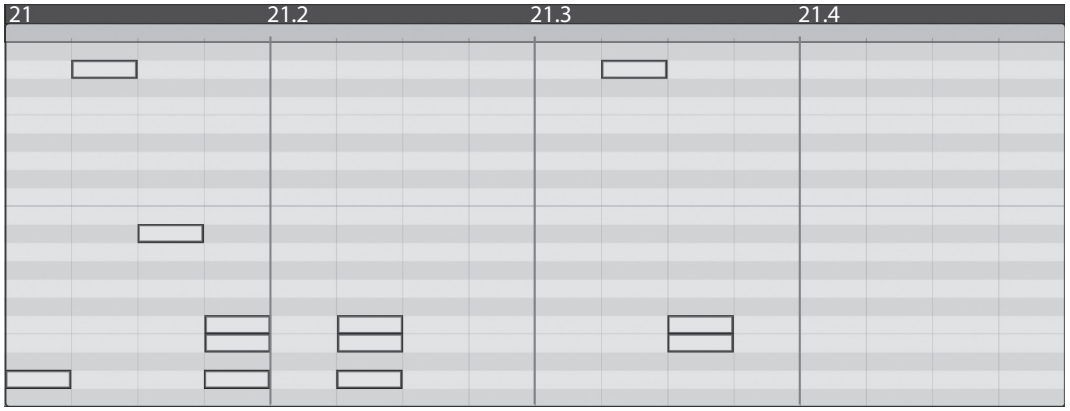
(d) Identify the piano roll pattern that best represents the drums in bar 21.

**(1)**

**A**

☒




**B**

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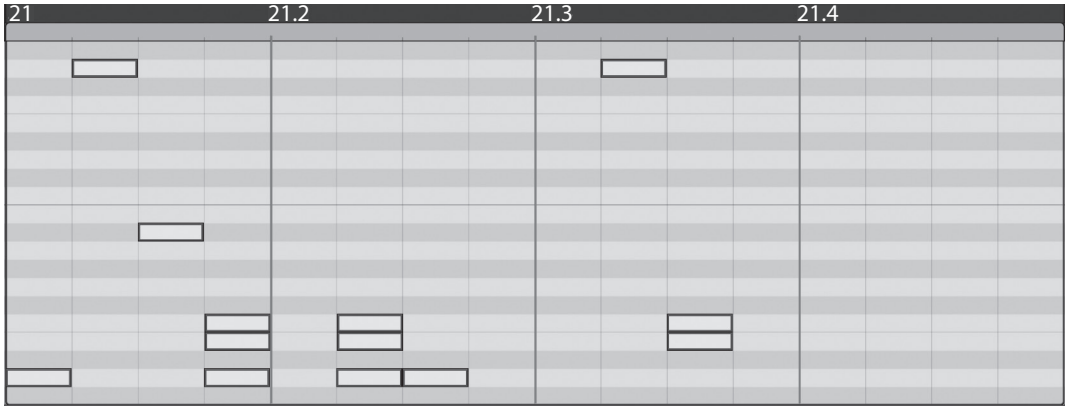


**C**

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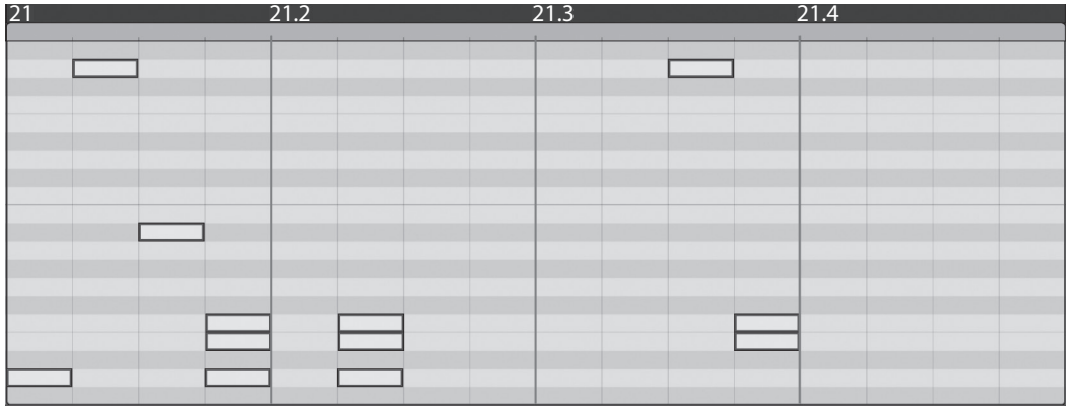
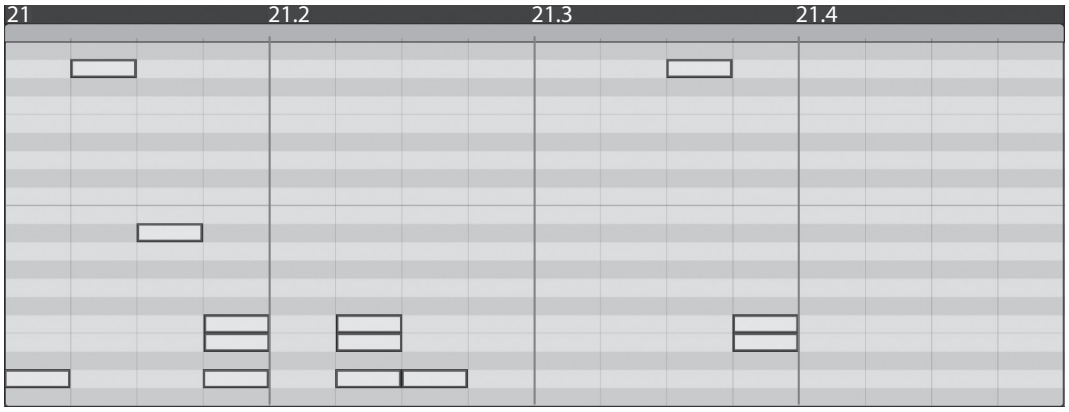



**D**

☒




**(Total for Question 1 = 9 marks)**

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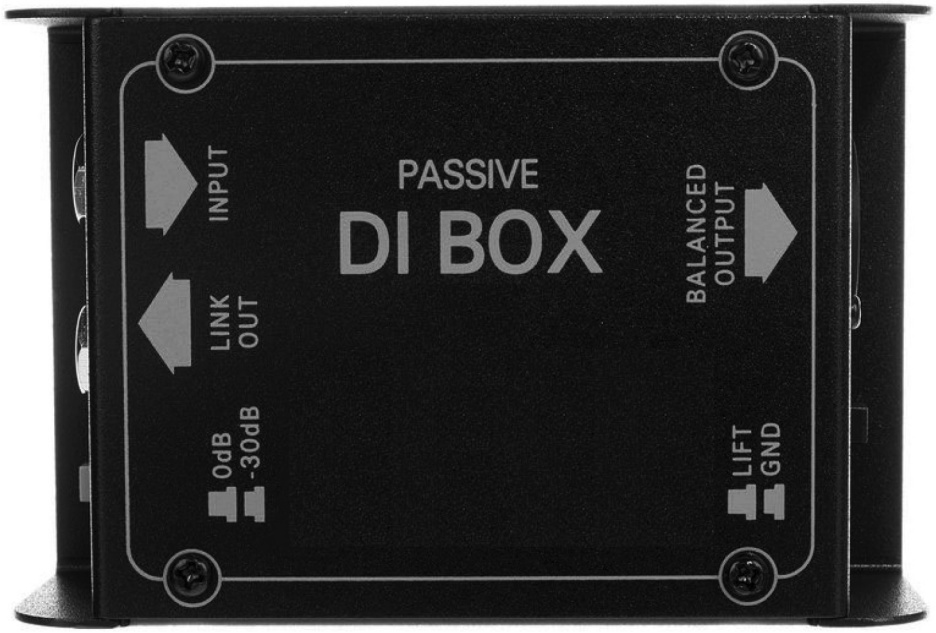
**Question 2 is about the keyboard and guitar track.**

**2** Import 'keyboard_and_guitar.wav' to a new track in your DAW. The beginning of this audio track should be aligned with the start of bar 1. The part begins in bar 2.

(a) The guitar part is recorded using DI. The picture below shows a DI box.




(i) State what DI stands for.

**(1)**

.....

(ii) Describe what the ground lift switch does.

**(2)**

.....

.....

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(iii) Describe how the balanced output connector on the DI box improves the quality of the sound.

**(4)**

(iv) Name **two** types of connector that could be used for a balanced cable.

**(2)**

1 .....

2 .....

(b) DI guitars can sound lifeless. Describe **two** methods that could be used to process a DI guitar and how they would improve the sound.

**(4)**

1 .....

2 .....

**(Total for Question 2 = 13 marks)**

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**Question 3 is about the bass part.**

**3** Import 'bass.mid' to a new track in your DAW. Align the part so that the first note is at the start of bar 2.

Import 'bass_example.wav' to a new audio track in your DAW. This file illustrates how bars 2–5 of the bass should sound. Do not use this audio in your final mix.

(a) Create a synth bass sound that is similar to 'bass_example.wav'.

- Use two square wave oscillators.
- Ensure the detuning between the oscillators matches the example.
- Ensure the filter setting matches the example.
- Ensure that the octave matches the example.

**(4)**

(b) (i) Name **two** other oscillator waveforms found on an analogue synthesiser.

**(2)**

1 .....

2 .....

(ii) Describe why analogue synthesisers have difficulty staying in tune.

**(2)**

.....

.....

.....

(c) Edit the bass part in bar 9 so the first note slides smoothly to the second note.

**(3)**

(d) The bass part has rhythm errors in the final two notes in bar 21. Correct this so it has the same rhythm as the electric piano.

**(2)**

**Bounce/export the completed bass part as a single 16 bit/44.1kHz stereo .wav file to the designated folder on your computer.**

**Name it 'q3_your candidate number' (e.g. *q3_1234*).**

**(Total for Question 3 = 13 marks)**

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**Question 4 is about the vocal part.**

**4** Import 'vocal.wav' to a new track in your DAW. The beginning of this audio track should be aligned with the start of bar 1. The part begins in bar 4.

(a) Listen to the delay on the vocal in bars 4–5.

(i) Identify the correct delay time:

**(1)**

☒ **A** 1/16 note

☒ **B** 1/8 note

☒ **C** 1/4 note

☒ **D** 1/2 note

(ii) List **two** advantages of using a plug-in delay over a digital hardware unit.

**(2)**

1 .....

2 .....

(b) Add a delay to the second vocal 'ooh' which starts in bar 6.

– Use the same delay time as in bars 4–5

– Match the number of repeats and the level to the delay in bars 4–5.

**(3)**

**Bounce/export the completed vocal part as a single 16 bit/44.1kHz stereo .wav file to the designated folder on your computer.**

**Name it 'q4_your candidate number' (e.g. *q4_1234*).**

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(c) (i) Describe why this vocal recording needs compression.

**(2)**

.....

.....

.....

(ii) State **two** problems that can occur when using compression.

**(2)**

1 .....

2 .....

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(d) Look at the compression plug-in below.

(i) Draw the threshold and ratio values shown in the graph on their respective knobs.

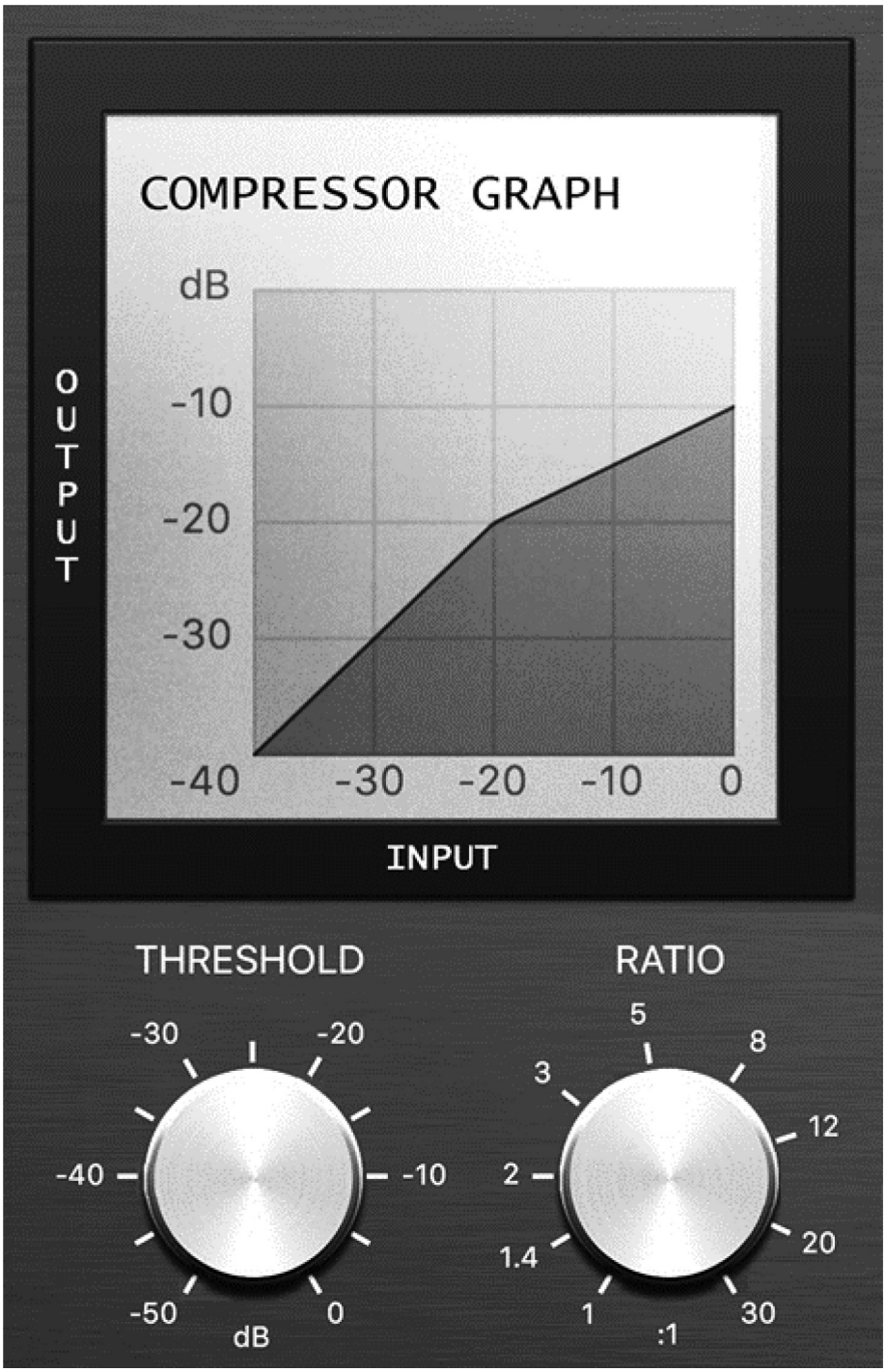
**(2)**

(ii) Draw and label lines on the graph showing compression ratios of 1:1 and ∞:1 using the threshold shown.

**(2)**

(iii) Label which of those lines is limiting.

**(1)**




**(Total for Question 4 = 15 marks)**

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**5** You should now have the following four tracks in your DAW: drums, bass, keyboard and guitar combined, and vocal.

Follow the instructions below to produce a final stereo mix.

(a) Add double tracking to the vocal from bar 22 to the end.

- Duplicate the vocal part onto a new track.
- Add a suitable delay.
- Pan the two parts hard left and right.

**(3)**

(b) Compress the vocals.

- Ensure that the dynamics of the performance are level throughout.

**(3)**

(c) Pan the filtered vocal in bars 10–11.

- Set the first repeat of 'music' hard left.
- Set the second repeat of 'music' hard right.
- The rest of the vocal should remain central until the end of bar 25.

**(2)**

(d) Apply reverb to the vocal and keyboard and guitar combined parts.

- Use a suitable reverb type and length for the style of music.
- The reverb must not hard pan with the vocal in bars 10–11.

**(3)**

(e) Balance the mix.

**(3)**

(f) Remove the noise at the end of the keyboard and guitar track.

**(1)**

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(g) Produce a final stereo mix.

- Ensure that the mix output is at as high a level as possible.
- It should be free from distortion.
- Do not limit or compress the mix output.
- Ensure that the beginning and end of the music are not cut off.
- Ensure that silences at the beginning and end do not exceed one second.

**(3)**

**Bounce/export the completed final mix as a single 16 bit/44.1kHz stereo .wav file to the designated folder on your computer.**

**Name it 'q5_your candidate number' (e.g. *q5_1234*).**

**(Total for Question 5 = 18 marks)**

**TOTAL FOR SECTION A = 68 MARKS**

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## SECTION B

**Answer Question 6. Write your answer in the space provided.**

**6** Figure 1 shows the amplifier settings chosen for recording a clean, bright electric guitar. The EQ controls on this amplifier are flat when turned to 10. Settings below 10 cut frequencies from the signal.

The amplifier is a twin speaker design. A dynamic microphone with cardioid response is placed 25 mm from the centre of one of the speaker cones, pointing directly at it.

Evaluate the settings and microphone choice.

**(16)**

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**(Total for Question 6 = 16 marks)**

**TOTAL FOR SECTION B = 16 MARKS**
**TOTAL FOR PAPER = 84 MARKS**

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